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STATE OF ALASKA

William A. Egan, Governor

ANNUAL REPORT OF PROGRESS, 1962 - 1963

FEDERAL AID IN FISH RESTORATION PROJECT F-5-R-4

SPORT FISH INVESTIGATIONS OF ALASKA

Alaska Department of Fish and Game

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INTRODUCTION

This report of progress consists of Job Segment Reports from the State of Alaska Federal Aid in Fish Restoration Project F-5-R-4, "Sport Fish Investigations of Alaska".

The project is composed of 25 separate studies designed to evaluate the various aspects of the State's recreational fishery resources. While some studies are of a more general nature and deal with gross investigational projects, others have been developed to evaluate specific problem areas. These include studies of king salmon, silver salmon, grayling and State Access requirements. The information gathered will provide the necessary background data for a better understanding of local management problems and development of future investigational studies.

The assembled progress reports may be considered fragmentary in many respects due to the continuing nature of the respective studies. The interpretations contained therein, therefore, are subject to re-evaluation as work progresses and additional information is acquired.

Volume 4 Report No. 7-B-2

JOB COMPLETION REPORT

RESEARCH PROJECT SEGMENT

State: Alaska Name: Sport Fish Investigations of Alaska.

Project No: F-5-R-4 Title: Evaluation of the King Salmon Sport Fisheries on the Lower Kenai Peninsula.

Job No: 7-B-2

Period Covered: July 1, 1962 to June 30, 1963.

Abstract:

A creel census was conducted on the Anchor River to obtain estimates of king salmon sport harvest and effort. King salmon escapement information was collected by aerial and foot surveys on the Anchor River, Deep Creek, Ninilchik River, Stariski Creek and Crooked Creek. Age data is presented on king salmon from the Anchor River.

Recommendations:

It is recommended that the king salmon sport fishing regulations now in effect on the Kenai Peninsula be retained until further investigations suggest changes.

It is recommended that the study be continued during 1963-1964 and the present objectives be retained.

It is recommended that the method of obtaining creel census interviews be changed to contacting anglers on the stream rather than at a checking station. There is no statute requiring fishermen to stop at a checking station and the number of anglers which fail to do so has increased every year of the census.

Objectives:

To investigate and measure the sport fish population trends and fishing success, with emphasis on king salmon, in the major recreational fishing streams on the lower Kenai Peninsula.

To evaluate the effect of management procedures currently applied to these sport fishing waters.

To provide recommendations for management of king salmon in these waters and direct the course of future studies.

Techniques Used:

King salmon sport harvest and effort on the Anchor River was determined by creel census. A creel census clerk, furnished by the Elmendorf Air Force Base Wildlife Unit, was billeted in a house trailer which also served as a checking station. The census station was located at the junction of the only road extending to the mouth of the Anchor River and the old road to Homer. This location was less than 100 yards from the confluence of the North and South Forks, the upper limit of the area open to salmon fishing, which made it necessary for the majority of the fishermen to pass the census station. An eight hour period, alternating between the hours of 0500 to 1300 and 1300 to 2100, was sampled on all weekends, holidays and one-half of the randomly selected weekdays. The hours from 2100 to 0500 were not sampled because previous census operations showed few anglers left the census area although there was some fishing. During a sampling period each vehicle leaving the census area was requested to stop and the following questions were asked: (1) number of anglers per car; (2) number of hours fished that day; (3) number of king salmon taken; (4) residence of anglers. King salmon which had not been dressed were weighed, measured, sex determined and scales taken for age analysis.

King salmon escapement was determined by aerial and foot surveys. A Piper Super Cub was used because of its low flying speed and maneuverability. Approximately a

three mile section, from the highway bridge downstream to the Forks (South Fork of the Anchor River), was surveyed by foot and correlated with aerial counts made a short time later over the same section and the entire stream. The same technique was employed in obtaining escapement information on king salmon in Deep Creek, Ninilchik River, Stariski Creek and Crooked Creek.

Findings:

Major effort was directed toward measuring the sport harvest and effort and enumerating king salmon on the Anchor River. The Anchor River was selected as an index stream to determine king salmon population trends because it is the largest of the five lower Kenai Peninsula king salmon streams and supports the heaviest fishing pressure. Also there is more information available on this stream because of past studies conducted by the Fish and Wildlife Service.

The Anchor River and surrounding area has been described by Allin (1954, 1956, 1957), Dunn (1960) and Logan (1961).

Catch statistics on the king salmon commercial fishery in Cook Inlet show a declining yield (Table 1). The 1961 and 1962 harvest are not directly comparable to those of previous years because the commercial season was opened approximately two weeks later. The later openings are believed, by the Commercial Fish Division, to have reduced the harvest by about 50 per cent. Because king salmon stocks in these lower Kenai Peninsula streams are at a low level current management practices have imposed stringent regulations on sport fishermen. The limit is one king salmon per day over 20 inches and the season extends from May 7 to July 8. The stream areas open to king salmon angling are: Anchor River, approximately two miles of stream between the mouth and the confluence of the North and South Forks; Deep Creek and Ninilchik River, the portion of stream between the

mouth and a marker placed two miles upstream. Stariski Creek and Crooked Creek are closed to king salmon fishing. The commercial harvest of king salmon in Cook Inlet was severely curtailed by the late opening (June 7) of the commercial season.

Table 1. The commercial harvest of king salmon in Cook Inlet from 1951 to 1962.

Year	Harvest	Year	Harvest
1951	187,511	1957	42,647
1952	74,469	1958	22,847
1953	89,429	1959	32,723
1954	65,325	1960	24,276
1955	46,495	1961	19,778
1956	65,309	1962	20,261

The creel census on the Anchor River extended from May 19 to June 27 which sampled the bulk of the fishing. The upstream migration of adult king salmon in the Anchor River follows a similar pattern every year. The fish first become abundant during the last week of May and remain so until the middle of June at which time they begin declining and by the first week in July the run is virtually over. The total legal catch of king salmon was estimated at 502. This was based on interviews with 651 fishermen which had taken 148 king salmon. Total sport fishing effort was estimated at 2,325 man-days. Fishing pressure for the total of all weekdays (1084 man-days) was nearly equal to that of the holidays and weekends (1241 man-days). The catch per hour was 0.053. A total of 442 anglers were interviewed to determine their place of residence. The majority (45.5 per cent) were military personnel chiefly from the Anchorage area. The residence of the other fishermen was as follows: local residents (Ninilchik to Homer), 23.3 per cent

residents other than local or military, 29.2 per cent; and out of state fishermen, 2.0 per cent. The mean number of anglers per car was 2.2 and the average number of hours fished was 4.3 per man.

Both harvest and effort were the lowest since the present study was initiated in 1960 (Table 2). Fishing effort determined by studies prior to 1960 is not directly comparable because these studies measured all species and extended the entire summer. The small harvest and effort can be explained, in part, by the frequent inclement weather which resulted in high turbid stream flows making fishing difficult. This occurred during late May and early June when the run is normally at its peak.

Limited creel census information was collected periodically on the Ninilchik River from May 11 to June 1. The 140 fishermen contacted had captured 31 king salmon. The catch per hour was 0.06. This stream appeared to receive much of the fishing effort that normally would have been expected on the Anchor River in late May and early June. The Ninilchik River is less turbid and does not experience the vicissitudes in flow.

King Salmon escapement surveys extended from June 30 to August 15. The last two weeks of July appear to be the best time for surveying because stream flows are usually low, fish are concentrated on the spawning areas and have attained the dark red coloration which makes them more readily visible. Dead spawned fish were observed in early August surveys. The escapement in the Anchor River, based on three aerial and two foot surveys, was estimated at 970 fish. This is a slight improvement over 1961 but lower than that of other years (Table 3). Less intensive surveys were conducted on the other four king salmon streams. Surveys were especially difficult on Crooked Creek because of the turbid water. The estimated king salmon escapements for all the lower Kenai Peninsula streams are presented in Table 4.

Table 2. The king salmon sport harvest and effort (man-days) on the Anchor River for past years.

Year	Harvest	Effort	Period of census	Area of census
1962	502	2,325	5/7 to 7/8	Forks to mouth
1961	1,012	6,165	5/7 to 7/4	Forks to mouth
1960	1,150	5,300	5/7 to 7/14	New Homer road to mouth
1957	335	5,800	Entire summer	Entire stream
1956	900	-	Entire summer	Entire stream
1954	293	3,000	Entire summer	Forks to mouth

Table 3. King salmon escapements on the Anchor River for past years.

Year	Escapement	Method of Escapement
1962	970	Aerial and foot surveys
1961	850	Aerial and foot surveys
1960	1,200	Aerial and foot surveys
1957	2,400	Weir counts*
1954	2,700	Weir counts*

*King salmon were still subjected to fishing after being enumerated through the weir.

Table 4. Estimated king salmon escapements in the lower Kenai Peninsula streams for 1962.

Stream	Escapement	Period of survey	Number of aerial surveys	Number of foot surveys
Anchor River	970	6/30 to 8/15	3	2
Crooked Creek	185	7/4 to 7/14	1	1
Deep Creek	745	7/2 to 8/15	2	1
Ninilchik River	525	7/3 to 7/24	2	1
Stariski Creek	355	7/1 to 7/24	2	2

Table 5. Percentage of king salmon in different age groups collected from the Anchor River from 1960 to 1962.

Age group	1960	1961	1962
3_1	1.1	-	-
3_2	2.7	2.9	-
4_1	2.7	-	-
4_2	6.5	10.6	31.9
5_1	-	1.0	-
5_2	76.0	21.1	40.4
6_2	11.0	64.4	27.7
Number in sample	183	104	47

There was considerable variation between aerial counts on the same stream and even foot surveys on the same stream. More fish were always observed on foot surveys than on aerial surveys over the same section of stream. Surveys were strongly influenced by the following: stream flow, turbidity and color of water, position of the sun, cloud cover, velocity and direction of wind, ability of pilot and experience of observer. Because of the aforementioned it is imperative that it be realized that the surveys so conducted have value as an index only and not as a total count.

A key scale was collected from 70 king salmon during the creel census. Of this sample, 23 scales (32.4 per cent) showed regeneration in the lacustrine area and were therefore rejected. Analysis of the remaining small sample showed that 5_2's were the dominant age group. A 5_2 refers to a fish which migrated to sea in its second year and returned as an adult in its fifth year. All scales analyzed showed smolt migrating to sea in their second year of life. The percentage of fish in each age group collected from the Anchor River from 1960 to 1962 is shown in Table 5.

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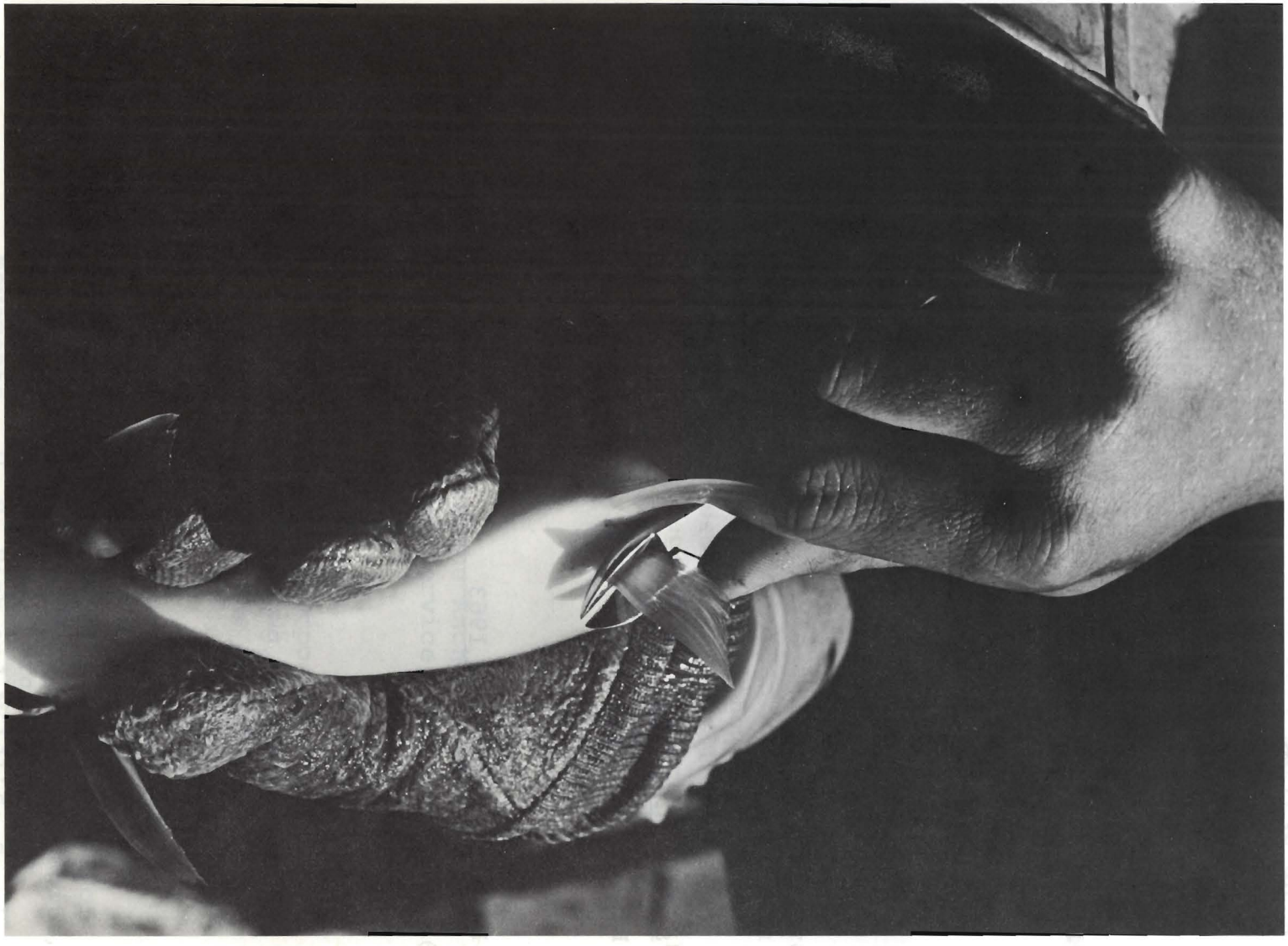

The marking (fin clip) of selected fish populations enables biologists to study migration of fish.